New England Common Assessment Program

Student Practice Test Booklet 2007

Grade 11

Mathematics

Student Name: _____

School Name: _____

Mathematics—Session 1 (Non-Calculator)

Answer questions 1 through 4 on page 2 in your Student Answer Booklet.

1 Look at this expression.

$$k(mk - k^2)$$

What is the value of this expression when $k = -1$ and $m = 2$?

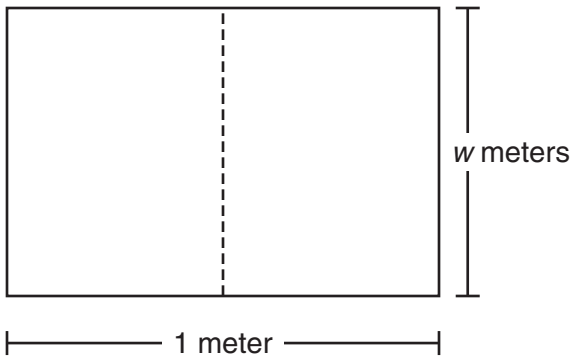
A. -2

B. 0

C. 1

D. 3

2 A rectangle is divided in half by a dotted line, as shown in this diagram.



not drawn to scale

Each half is similar to the original rectangle. The length of the original rectangle is 1 meter. What is the width, w, in meters, of the original rectangle?

A. $\frac{1}{4}$

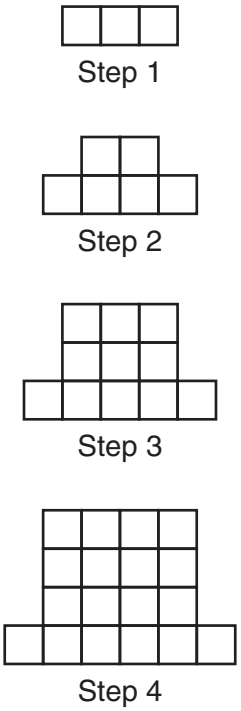
B. $\frac{1}{2}$

C. $\sqrt{\frac{1}{2}}$

D. $\sqrt{2}$

GO ON

3 Look at this pattern.



If the pattern continues, how many ☐ will be in Step 50?

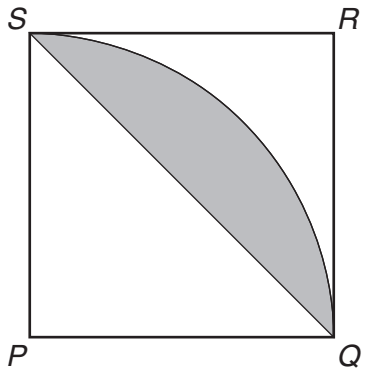
A. 100

B. 102

C. 2500

D. 2502

4 Look at the shaded-gray figure in square *PQRS*.



The figure is formed by drawing a line segment and a quarter-circle.

- The line segment connects point *S* to point *Q*.
- The quarter-circle has a radius of 6.0 centimeters and has its center at point *P*.

What is the area, in square centimeters, of the shaded-gray figure?

A. $9\pi - 18$

B. $\frac{9\pi}{2}$

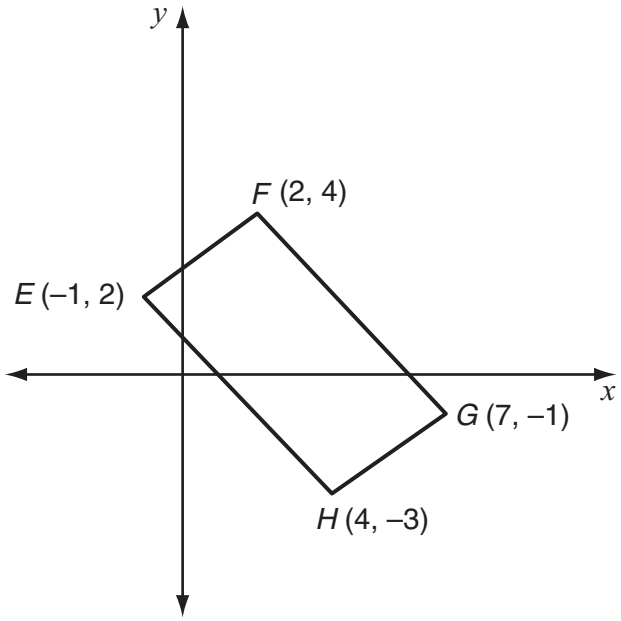
C. 9π

D. $36\pi - 18$

GO ON

Answer question 5 on page 2 in your Student Answer Booklet.

5 Look at parallelogram *EFGH*.



The diagonals of parallelogram *EFGH* intersect at point *P*. What are the coordinates of point *P*?

GO ON

Answer question 6 on page 2 in your Student Answer Booklet.

6 When Andy, Felicia, and Tran started a company, they invested these amounts of money.

- Andy: $1000
- Felicia: $5000
- Tran: $7500

a. What fraction of the total amount invested was Andy's investment?

Andy, Felicia, and Tran decided to share the profits in the same ratio as the ratio of the amounts they invested. This year the company had a profit of $162,000.

b. How much of the profit should each person receive? Show your work or explain how you know the amount of profit for each person.

Jay, Kim, and Lisa also started a company. Jay invested x dollars, Kim invested y dollars, and Lisa invested z dollars. They will share their profits in the same ratio as the ratio of the amounts they invested.

c. What fraction of the profits should Jay receive?

DO NOT GO ON. STOP

Mathematics—Session 2 (Calculator)

Answer questions 7 through 10 on page 3 in your Student Answer Booklet.

7 What are the coordinates of the image of point $P(1, 4)$ after a **clockwise** rotation of 90° about the origin?

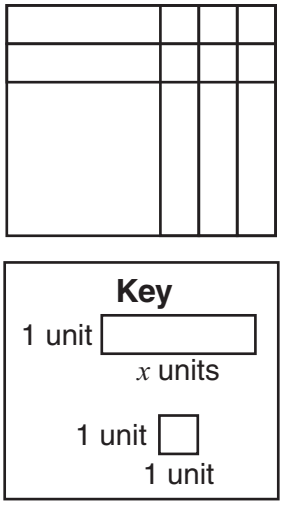
A. $(4, -1)$

B. $(4, 1)$

C. $(1, -4)$

D. $(-1, -4)$

8 Ariel used tiles to make this rectangle.



Which equation is modeled by Ariel's rectangle?

A. $x(5x + 6) = 5x^2 + 6x$

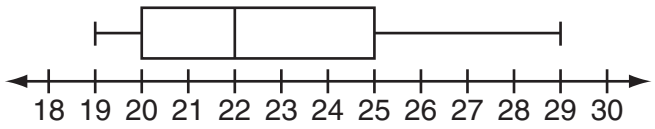
B. $(x + 3)^2 = x^2 + 6x + 9$

C. $(x + 2) + (x + 3) = 2x + 5$

D. $(x + 2)(x + 3) = x^2 + 5x + 6$

GO ON

9 Andy recorded the number of points he scored in each basketball game he played last season. He used the data to make this box-and-whisker plot.



Number of Points per Game

Based on the box-and-whisker plot, which statement **must** be true?

A. Andy's mean score per game was 22 points.

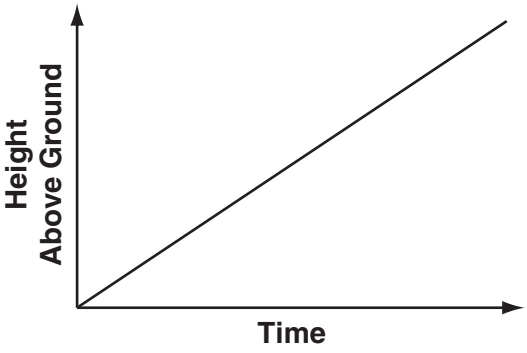
B. Andy scored more than 25 points in only 1 game.

C. In the games he played, Andy's scores had a range of 5 points.

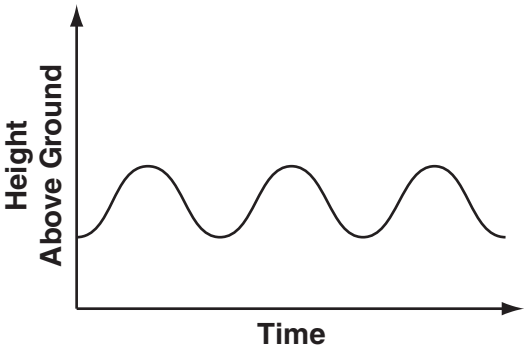
D. In at least half the games he played, Andy scored from 20 points to 25 points.

10 Emma pedals her bicycle at a constant rate. Which graph could show how one pedal's height above the ground changes with time?

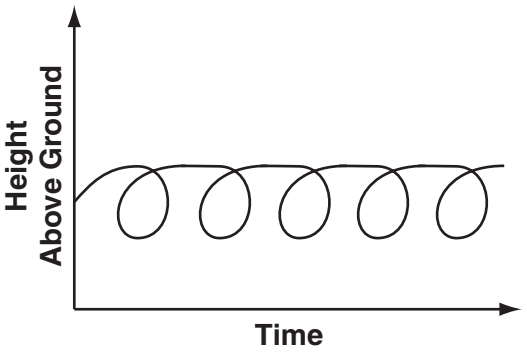
A.



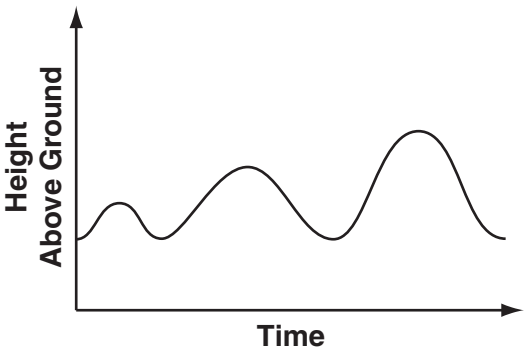
B.



C.



D.



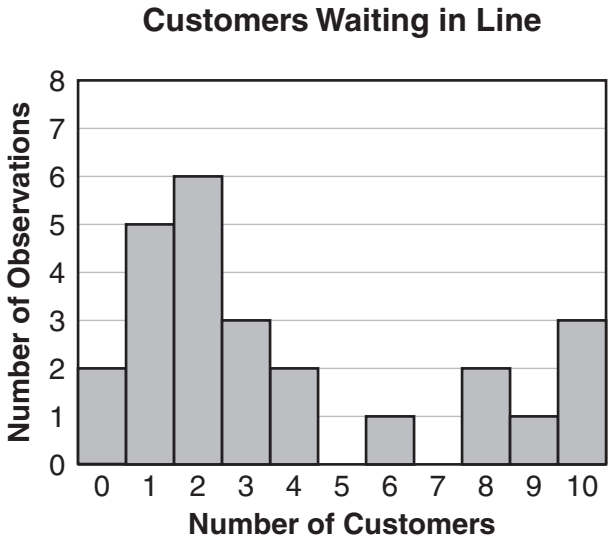
GO ON

Answer question 11 on page 3 in your Student Answer Booklet.

11 A rectangle has a length of 5 feet and a width of 3 feet. When the length and width are each increased by the same amount, the perimeter is increased by 10 feet. By how much are the length and width increased?

Answer question 12 on page 3 in your Student Answer Booklet.

12 Every 15 minutes on Thursday, Aisha counted the number of bank customers waiting in line. She made this bar graph from all of her observations.



a. What was the median number of customers waiting in line on Thursday?

b. What was the mean number of customers waiting in line on Thursday?

GO ON

Answer question 13 on page 3, in your Student Answer Booklet.

13 A college recruiter compared the starting salaries for graduates with various majors. This table shows the results for two majors.

Major	Mean Starting Salary	Median Starting Salary	Range of Starting Salaries
Business	$39,000	$30,000	$20,000
Engineering	$35,000	$34,000	$12,000

Derrick will choose a major. He will decide between a business major and an engineering major. Use **all** of the information in the table to explain which major Derrick should choose.

STOP

Measured
Progress